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**ENTREPRENEURIAL INTENTION, COGNITIVE
SOCIAL CAPITAL AND CULTURE: EMPIRICAL
ANALYSIS FOR SPAIN AND TAIWAN**

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ENTREPRENEURIAL INTENTION, COGNITIVE SOCIAL CAPITAL AND CULTURE: EMPIRICAL ANALYSIS FOR SPAIN AND TAIWAN

Abstract

Objectives: The main purpose of this paper is building a research model to integrate the socioeconomic concept of social capital within intentional models of new firm creation. Nevertheless, some researchers have found cultural differences between countries and regions to have an effect on economic development. Therefore, a second objective of this study is exploring whether those cultural differences affect entrepreneurial cognitions.

Research design and methodology: Two samples of last year university students from Spain and Taiwan are studied through an Entrepreneurial Intention Questionnaire (EIQ). Structural equation models (Partial Least Squares) are used to test the hypotheses. The possible existence of differences between both sub-samples is also empirically explored through a multigroup analysis.

Main outcomes and results: The proposed model explains 54.5% of the variance in entrepreneurial intention. Besides, there are some significant differences between both subsamples that could be attributed to cultural diversity.

Conclusions: This paper has shown the relevance of cognitive social capital in shaping individuals' entrepreneurial intentions across different countries. Furthermore, it suggests that national culture could be shaping entrepreneurial perceptions, but not cognitive social capital. Therefore, both cognitive social capital and culture (made up essentially of values and beliefs), may act together to reinforce the entrepreneurial intention.

1.- Introduction

The entrepreneurship research programme, among its different fields of study, has recently been focused on the analysis of potential entrepreneurs' behaviour, and how they carry out the process of opportunity recognition and firm creation (Krueger and Brazeal, 1994, Reynolds, Hay and Camp, 1999, Krueger 2003, Shane and Eckhardt, 2003). However, as it is well known, one of the main difficulties in analysing entrepreneurial behaviours is the need for multidisciplinary research.

From a psychological point of view, some scholars had been elaborating different models to explain why some persons choose to become entrepreneurs and others do not (McClelland, 1961, Brockhaus, 1980, Cooper and Dunkleberg, 1987). From a sociological point of view, other scholars have emphasized the influence of some social factors and networks (social structure) to gain access to a variety of resources very important for the creation of new firms and for the consolidation of existing firms (Wilken 1979, Birley 1985, Butler and Hansen 1991, Johannisson, 1995, Jack and Anderson, 2002, Hoang and Antoncic, 2003, Greve and Salaff, 2003).

Nevertheless, few studies have attempted to connect both the psychological and the sociological views of entrepreneurship. Advances in social cognition, such as those derived from Bandura's (1977) social learning theory, may be applied to the field of entrepreneurship. They offer new possibilities to better understand the role played by social relationships in the intention-creation and opportunity-recognition cognitive processes (Krueger and Carsrud 1993, Krueger 2003). However, the links between social structure and cognitive process has remained in a secondary position in these models.

One possibility to better analyse this link could be inserting into these models some constructs from the cognitive dimension of social capital. Social capital is a concept in an emerging phase which could be defined as capital captured in the form of social relationships (Lin 2003). Its cognitive dimension, that is to say, cognitive social capital, could be defined as the values, attitudes, beliefs and trust transmitted through those social relationships (Naphiet and Ghoshal, 1998, Uphoff, 2000, Grootaert and Bastelaer, 2001).

Therefore, in an attempt to shed some light into the process of entrepreneurial emergence and firm creation, this paper firstly tries to build a research model which includes cognitive social capital into an entrepreneurial intention model. This model will be empirically tested using the Partial Least Square statistic technique.

This model is expected to be cross-culturally robust. Nevertheless, some social researchers have found clear cultural differences among countries and regions which influence economic development. Therefore, a second objective of the paper is to explore whether these cultural differences could have some influence on entrepreneurial cognitions.

To reach these objectives, two samples of young undergraduate students in the last year of their degree from Spain and Taiwan will be used. This will allow us to explore whether cultural differences could also play some relevant influences on entrepreneurial cognitions. Therefore, in addition to testing the hypotheses of the research model, an exploratory analysis (multigroup analysis) will be performed to look for possible differences among the target population of both countries.

After this introduction, the paper is organized in six additional parts. In the following section, the entrepreneurial intention models and the meaning of the cognitive dimension of social capital will be presented. In section three, social capital will be introduced into entrepreneurial intention models, leading to our research model. The specific hypotheses to be tested are then made explicit. In section four, the possible relationship between culture and entrepreneurial activity will be considered. The fifth section describes the methodology used for sample selection, data gathering and for the statistical analysis. Main results are presented in section six. The paper ends up with a discussion and interpretation of those results and their implications.

2. - Theoretical background

a) Entrepreneurship and intention-based models

Much research has tried to explain why some persons but not others choose to become entrepreneurs. They started paying attention to psychological characteristics and personality traits which might differentiate entrepreneurs from the rest of the population (McClelland, 1961, Collins and Moore, 1964, Borland, 1975). Later on, other research works emphasized the importance of different demographic factors among entrepreneurs. Age, gender, birth, religion, ethnic group, education, socioeconomic status or professional experience would be among these factors (Cooper and Dunkelberg, 1987, Veciana 1989, Reynolds, Storey and Westhead, 1994, Storey 1994). Nevertheless, from a theoretical point of view, these approaches have been criticised both for their methodological and conceptual problems and for their weak explanatory

capacity (Gartner 1989, Shaver and Scott ,1991, Krueger, Reilly and Carsrud, 2000).

In this sense, Bandura's (1977) social learning theory attributes great importance to the influence of environmental factors over higher *cognitive processes* and learning. Behaviours would thus be the results of environmental stimuli, feed-back processes (reward and punishment) and, mainly, observational learning.

Along this line, the entrepreneurial intention approach has recently emerged. Unlike previous entrepreneurship models, this one emphasizes the *individual's cognitive process* (Shapero and Sokol, 1982, Krueger and Carsrud, 1993, Kolvereid, 1996, Tchakev and Kolvereid, 1999, Baron, 2004, Liñán and Chen forthcoming). The central factor of this theory is the individual intention to become an entrepreneur. Intentions capture the motivational factors which influence behaviour, becoming measures of the effort the individual plans to exert to perform the behaviour. So, the higher the intention to become an entrepreneur, the higher the probability of its effective performance will be.

The most important early contribution to this approach within the field of entrepreneurship is the 'entrepreneurial event' theory (Shapero and Sokol, 1982). According to it, individuals decide to create a firm (become potential entrepreneurs) when the entrepreneurial activity is perceived as more desirable and more feasible than other alternatives. Thus, *perceived desirability* would be the degree of attraction towards becoming an entrepreneur. *Perceived feasibility*, in turn, would refer to the perception about the self-capacity or self-efficacy (Bandura, 1997) to perform the entrepreneurial behaviour.

Similarly, Krueger and Casrud (1993) and Krueger and Brazeal (1994) apply the theory of planned behaviour (Ajzen, 1991) to explain entrepreneurial potential. According to them, intention to set a new firm would be influenced by three perceptions. The first one, personal attraction towards the entrepreneurial activity, is very close to Shapero and Sokol's (1982) perceived desirability. Perceived behavioural control or self-efficacy is equally close to perceived feasibility (Krueger et al., 2000). The third one, subjective norms, refers to perceptions about the existing social pressure to perform the firm-creation behaviour. That is, the perception that people in their closer environment would approve of their firm-creation decision (closer environment approval), would contribute towards a more favourable entrepreneurial intention.

More recently, human capital constructs, such as 'entrepreneurial knowledge', have been added as explicative factors within this model (Liñán, 2004). Entrepreneurial knowledge could be defined as the knowledge individuals have about different aspects related to both the entrepreneurial activity and the institutions promoting it. It may be argued that entrepreneurial knowledge would derive both from the human capital accumulated during the whole life of the individual and experience (experiential learning).

Nevertheless, a human-capital construct, such as entrepreneurial knowledge, would not be paying attention to the social relationships making possible its accumulation. Social networks are a highly relevant element in the creation of human capital. According to Coleman (1988), the parents' level of human capital has a positive influence on children's level, whenever parents and children have strong ties. Coleman also points out how parents' social

relationships with other people in their personal environment significantly contribute to the formation of children's human capital.

Therefore, following this line of reasoning, the inclusion of different constructs in the intention model representing social relationships would help to improve its explanatory capacity. In particular, the cognitive dimension of those social relationships would be especially relevant. Social capital theory may be helpful in this respect.

b) Social capital.

Bourdieu (1986) defines social capital as the aggregate actual and potential resources which are linked possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition. Then, social capital in this Bourdieu's formulation is related to the existence of social relationships and also trust and reciprocity between people.

Social capital emerges from a process of investment in human relationships, for which resources and, more specifically, time is required (Lin, 2003). The result of this investment is a stock of assets, such as easier access to information, better coordination of activities, lower transaction costs or easier collective-decision actions (Grootaert, 1998). This stock of assets generates a flow of benefits, such as income or revenue streams (Collier, 2002) but also allows individual opportunity recognition and exploitation (Shane and Venkataraman, 2000). Social capital also gives access to other forms of capital, such as human capital (Coleman, 1988). Moreover, social capital, same as physical capital, can be accumulated and can also be depreciated or even

destroyed (Putnam, 1993, 2000, Flap and Volker, 2004, Svendsen and Svendsen, 2004).

Putnam (1993) identifies social capital with networks, social norms and trust within horizontal organizations, making collective action and cooperation easier. Nevertheless, despite what might be inferred from Putman's view, social capital has to be considered not only at an intermediate or organizational level, but even more at a multidimensional level (Grootaert, 2001). On the one hand, at the macro- or social level, social networks may have potential benefits for a society, such as the improvement in income levels (North, 1990, Fukuyama, 1995, Knack and Keefer, 1997, Grootaert and Bastelaer, 2001, Dakhli and Clerq, 2004). On the other hand, at the micro-level, individual relationship networks may also have benefits, such as helping in the firm start-up process or in the entrepreneurial development (Lin, 2003, Chell and Baines, 2000, Davidsson and Honig, 2003).

Linkages with other individuals or organizations may differ in strength. Granovetter (1983, 1985) was the first to differentiate between strong and weak ties. The strength of the linkages depends on the frequency and proximity of contact between individuals. Both strong ties (among members of a family or ethnic group) and weak ties are complementary for an efficient development of social capital (Woolcock and Narayan, 2000). In this sense, we can talk about *bonding social capital*, derived from intra-community strong ties, and *bridging social capital*, derived from extra-community weak ties. Both categories would be the result of the relational dimension of social capital (Naphiet and Ghoshal, 1998).

Nevertheless, the benefits from both bonding and bridging social capital at whichever level (micro, intermediate and macro-levels) would derive, in turn, from the two essential dimensions of social capital: *structural and cognitive ones*. Until now, the role of structural social capital in the form of personal networks has been studied as an important element in the creation and development of entrepreneurial firms (Jack and Anderson, 2002, Hoang and Antoncic, 2003, Greve and Salaff, 2003). Conversely, the possible role of cognitive social capital (CSC) within entrepreneurship research has not yet been considered.

One reason to explain this may be that structural social capital is a relatively objective and externally observable dimension. On the other hand, cognitive social capital (CSC) derives from mental processes and resulting ideas, reinforced by culture and ideology, generating values, attitudes, beliefs and trust. Thus, cognitive social capital (CSC) has a subjective and intangible character.

According to Naphiet and Ghoshal (1998), the cognitive dimension of social capital is, in general, very important. It helps individuals to making sense of information and classifies it into perceptual categories. In particular, CSC provides assets in the way of shared languages or vocabulary, and shared narratives. Firstly, shared language and vocabulary facilitate access to people and information, influence perceptions regarding the likely benefits of exchange and, finally, enhance combination capabilities. Secondly, shared narratives, such as myths, stories or metaphors, enable the creation and transfer of new interpretations of events and, therefore, facilitate the combination of different forms of knowledge.

Then, the question arises whether these positive characteristics of CSC help explain why some persons and not others choose to become entrepreneurs. Thus, the interest in recent entrepreneurship research towards cognition as a source of discovery, evaluation and exploitation of entrepreneurial opportunities could offer new possibilities to consider the role of CSC (Baron 2004). Specifically, CSC could be included within entrepreneurial intention models as independent variables.

3.- Cognitive social capital within entrepreneurial intention models: research hypotheses

Our proposed integration of social capital into an entrepreneurial intention model is done to explain mental processes. Therefore, according to the classification made in the previous section, we point out two assumptions in our model; firstly, social capital will be located at the individual level of analysis and, secondly, we will consider only the cognitive dimension of social capital.

Few works link the cognitive dimension of social capital with entrepreneurship. One of them argues that cognitive social capital can shape the cognitive processes of potential entrepreneurs, thus influencing perceptions towards start-up (de Carolis and Saporito, 2006). In this sense, the different elements of cognitive social capital (trust, values, shared languages or shared narratives) would be the source of cognitive biases or errors, such as overconfidence, illusion of control and the belief in the law of small numbers. Therefore, these cognitive biases should exert their influence on risk perception and on the exploitation of entrepreneurial opportunities (Simon et al., 2000, Baron, 2004).

Nevertheless, an important consideration should be made when working with the entrepreneurial intention model. Although, Ajzen's (1991) model introduces a construct that may be considered as a form of social capital (perceived subjective norms), he found that, in general, its direct influence on intention is quite weak. In fact, eleven out of nineteen empirical studies he analysed find its regression coefficient to be negative or non-significant. Specifically for entrepreneurship, Krueger et al. (2000) did not find any direct relationship from perceived subjective norms to entrepreneurial intention either. In later work, Krueger (2003) considered 'perceived social norms' as an antecedent of desirability.

These reasons lead us to establish the possibility that CSC could firstly exert an influence on perceptions (desirability and feasibility) and only indirectly on intention (figure 1). In this sense, Simon et al. (1999) and de Carolis and Saporito's (2006) models contribute to the theoretical and empirical foundation for this assumption.

Nevertheless, as mentioned above, social capital may be bonding or bridging, depending on the strength or weakness of the links. Both kinds of social capital have their cognitive dimension and both could exert their influence on perceived feasibility and desirability and only indirectly on intention.

Firstly, bonding cognitive social capital (CSC), based on strong ties, generates different values, trust, shared languages and share narratives, which would affect individual perceptions. Thus, contact with relatives and close entrepreneurs could contribute to generating more favourable perceptions of desirability and even feasibility to start-up (Cooper and Dunkelberg, 1987, Scherer, Brodzinsky and Wiebe, 1991, Kuratko and Mathews, 2004, Greve and

Salaff, 2003). Besides, those elements generate trust in the ability to perform a specific behaviour because they enhance combination capabilities (Naphiet and Ghoshal, 1998). Therefore, our first two hypotheses are (see figure 1):

H1: Bonding CSC positively influences perceived desirability to become an entrepreneur.

H2: Bonding CSC positively influences perceived feasibility to become an entrepreneur.

Secondly, bridging cognitive social capital based on weak ties could also generate, through the acquisition of information and experience, favourable values and beliefs towards firm start-up (Jack and Anderson, 2002, Hoang and Antoncic, 2003). This influence would derive from informal relationships established, for instance, in previous employee positions (Ray, 1993, Ozgen and Baron, 2007). Nevertheless, It could also derive from informal relationships with specific business networks, such as entrepreneurial promotion agencies, certain entrepreneurial organizations or certain entrepreneurial networks (Bryson et al., 1993). It may be reasonably assumed that having this kind of contacts derived from one's own experience may contribute to higher entrepreneurial self-efficacy (Ozgen and Baron, 2007). Therefore, the third hypothesis is (see figure 1):

H3: Bridging CSC positively influences perceived feasibility to become an entrepreneur.

The last two additional hypotheses would derive directly from Shapero and Sokol's (1982) and Ajzen's model (1991). These have been consistently supported by the empirical evidence (Autio et al., 2001, Erikson, 1999, Kolvereid, 1996, Kolvereid and Isaksen, 2006, Krueger, 1993, Krueger et al.,

2000, Lee and Wong, 2004, Peterman and Kennedy, 2003, Tchakev and Kolvereid, 1999). Specifically, they are (see figure1):

H4: Perceived desirability towards start-up positively influences the entrepreneurial intention.

H5: Perceived feasibility towards start-up positively influences the entrepreneurial intention.

Insert figure 1 about here

4.- The moderating role of culture on entrepreneurial intention.

Can the influence of CSC on entrepreneurial intention be different across countries and regions? Obviously, the consideration of culture is an important element to take into account to answer this question. The research model proposed is expected to be cross-culturally robust because many factors underlying entrepreneurial behaviour are common across cultures (McGrath and MacMillan, 1992, McGrath et alia, 1992). Nevertheless, some social researchers see clear cultural differences between countries and even regions of a same country (Inglehart 1997, Hofstede's 2003). Therefore, some entrepreneurship researchers consider these cultural differences as influencing the differences in entrepreneurial behaviour across countries and regions (Shane et alia, 1991, Davidsson, 1995, Mueller and Thomas, 2001, Hayton et alia, 2002).

According to Spilling (1991), the cognitive concept of culture is related to ideas, values and norms common to a group of people. In the same sense,

Inglehart (1997) defines culture as the set of basic common values which contribute to shaping people's behaviour in a society. According to Hofstede (2005), the notion of culture also includes patterns of thinking, feeling and acting, which are learned and shared by people living within the same social environment. He calls those patterns of behaviour software of the mind and, thus, defines culture as «the collective programming of the mind which distinguishes the members of a group of people from others» (Hofstede, 2005: XXX).

Cultural factors must be considered as a variable, not a constant, within whatever empirical research. Their changes throughout time exert an influence on economic development. Weber's (1969) theory about protestant ethic and the origin of capitalism, Hoselitz's (1960) and Hagen's (1962) theories about social change and development, or McClelland's (1961) theory about need of achievement and development are pioneers in this line of research. Nevertheless, if we analyse carefully all these theories, they have something in common: they consider entrepreneurship as one of the most important links between culture and economic development. More recently, this link has been emphasized by researchers both on Italian Industrial Districts (Becattini, 1979) and on local endogenous development theory (Vázquez, 2002; Romero and Santos, 2007).

According to Davidsson (1995), culture may influence entrepreneurship both through social legitimation (at the aggregate level) and through promoting on individuals certain positive attitudes related to firm creation. As Hofstede (1980) pointed out, the reason why this happens is that culture shapes people's

cognitive schemas, programming behavioural patterns which are consistent with the cultural context.

Entrepreneurs' cognitive schemas derived from culture can help entrepreneurs in several aspects (Busenitz and Lau, 1996): reducing the uncertainty of taking a decision, identifying cause/effect relationships to advance the development of ideas and opportunities, facilitating forecasts and predictions about outcomes and, what is most important in this study, increasing the intention to start-up.

Starting from Krueger and Casrud (1993) and Shapero and Sokol (1982), Mitchell's et alia (2002) propose that cultural values exert a direct influence on arrangement, ability and willingness cognitions and, only then, on the decision to start-up. This model has some similarities with the model proposed above. On the one hand, ability and willingness cognitions are very similar to perceptions of feasibility and desirability in our model. On the other hand, arrangement cognitions are related to our concept of CSC.

Nevertheless, the specific position of culture within the model proposed in this paper is difficult to establish. In principle, there could be two possibilities (figure 2). Firstly, culture could exert a direct influence only on CSC, which in turn would affect perceptions (option A in figure 2). Secondly, CSC and culture could both exert their own independent influence directly on perceptions, since values and beliefs are the essence of both constructs (option B).

Insert figure 2 about here

In the empirical analysis that follows, the entrepreneurial intention research model proposed in section 3 is going to be tested in a population from two

different countries, Spain and Taiwan. Both countries are quite different in many aspects and national culture is not an exception. In fact, according to Inglehart et al. (2004), Taiwan's culture is slightly more secular-rational than that of Spain and, according to Hofstede (2005), Spain would be characterized by higher individualism and uncertainty avoidance than Taiwan.

Then, although we expect the model to be cross-culturally robust, an exploratory analysis will be performed to look for possible differences among both sub-samples. Results will be discussed, suggesting some implications for the role of culture in the entrepreneurial intention model with CSC.

5.- Data and methodology.

a) Sample selection

The empirical analysis was carried out through a questionnaire to last-year undergraduate students. The selection of this target population was due to three reasons: Firstly, this kind of population is commonly used in entrepreneurship research (Autio et al., 2001, Tkachev and Kolvereid 1999, Krueger et al. 2000, Fayolle and Gailly 2004, Veciana, Aponte and Urbano, 2005). Secondly, according to Reynolds et al. (2002), university graduates from 25 to 34 years old are the segment of the population showing higher probability to become entrepreneurs. Finally, these students are at the point of facing their own choice of professional career. Therefore, their answers could be expected to be more careful and pondered.

The Spanish sample has been obtained from three public universities in Andalusia. Two of them (Seville and Pablo Olavide universities) are located within the Seville metropolitan area, with more than 1.2 million inhabitants. The

third one is Jaen University, located in a middle-sized rural-area town. The final Spanish sample was composed of 400 students: 46 from Jaen University, 31 from Pablo Olavide University, and the 323 remaining ones from Seville University. 69.2% of the sample corresponds to Management students and the rest to Economics. In particular, all the questionnaires from Jaen and Pablo Olavide Universities correspond to Management students, because the Economics degree is not on offer there. 55% of respondents are women, while the average age is 23.7 years old. These percentages broadly correspond with the general characteristics of the students at both degrees. Therefore, the sample can be considered as representative.

The Taiwanese sample answered a Chinese version of the questionnaire, translated using the double-back translation system. They are participants of the Technology Innovation Competition. This is the most important business-plan competition for university students in Taiwan. One of the steps consists on a 3-day winter camp. It was during this stage that the fieldwork was carried out. Two people were randomly selected from each competing team and asked to answer the questionnaire. 133 valid questionnaires were thus collected. Average age is 23.1 years and 42.1% of respondents are female. Again, business is the most common degree (60.6%), followed by engineering (24.4%), the rest being mostly health and life sciences students.

Some differences do arise between both samples, as might be expected. In the first place, the Spanish sample includes significantly more women. Similarly, knowing an entrepreneur is more common in Spain (86% compared to 48.5% of the Taiwanese sample). This difference is consistent for all possible sources of entrepreneurial role models: family (66.0% in Spain, 27.8% in Taiwan); friends

(57.3% to 23.3%) or boss/foreman (17.5% to 4.5%). On the other hand, even though the proportion of respondents having work experience is broadly similar (43.5% to 36.8%), Taiwanese students have much higher self-employment experience (2.5% in Spain, 8.5% in Taiwan).

b) Measures

The Entrepreneurial Intention Questionnaire (EIQ) used for the analysis has been carefully developed starting from the literature and specifically designed to allow its statistical validation. For its construction, a rigorous analysis of other instruments used in the literature has been performed. The possible existing discrepancies between those other instruments have been solved resorting to Ajzen's (1991, 2001, 2002) theory of planned behaviour. The EIQ items used in this analysis are included in the appendix.

Social capital measures are essentially multidimensional (Granovetter, 1983, 1985, Woolcock and Narayan, 2000, Uphoff, 2000, Grootaert and Bastelaer, 2001). Thus, bonding CSC has been measured as a second order dimension, encompassing four first-order constructs: family role-model, other role-models, valuation of entrepreneurship in the closer environment, and closer-environment approval for start-up. Bridging CSC, in turn, has also been measured as a second-order dimension encompassing two first-order constructs: knowledge of the institutional entrepreneurial environment, and labour experience.

The EIQ used in this analysis has already been statistically validated with satisfactory results (Liñán and Chen, forthcoming). The central elements of the entrepreneurial intention model (Krueger et al., 2000, Kolvereid, 1996, Ajzen, 1991, Liñán, 2004) are relatively well established. They have been measured

through 7-point likert-type scales with five (desirability) and six items (feasibility and intention).

c) Assessment of epistemic relationships

Epistemic relationships describe the link between theory (constructs) and data (indicators) (Fornell, 1982). Basically, there are two types of epistemic relationships (Jarvis, McKenzie and Podsakoff, 2003, McKenzie, Podsakoff and Jarvis, 2005). On the one hand, 'reflective' indicators are assumed to reflect the unobserved theoretical construct and, hence, covary with the level of the latent variable. On the other hand, 'formative' indicators produce or jointly influence the composite latent variable. Manifest variables, named formative indicators, give rise to the latent variable. Therefore, formative indicators are not necessarily correlated (Chin and Gopal, 1995). Consequently, traditional reliability and validity assessment have been argued as inadequate (Bagozzi, 1994, Bollen, 1989).

Thus, the constructs in our model have been assessed according to the four criteria proposed by Jarvis, McKenzie and Podsakoff (2003) and McKenzie, Podsakoff and Jarvis (2005). Most constructs and first order dimensions have been measured through reflective indicators (approval, valuation, contact, desirability, feasibility and intention). Only the construct dimension regarding non-family role models and the two second-order constructs (bonding and bridging CSC) present formative relationships with regard to its indicators and dimensions, respectively.

d) Statistical technique used in the empirical analysis.

Given the characteristics of the model proposed in section three, a structural equation model will be used to test the hypotheses presented there. In particular, a multivariate analysis technique based on Partial Least Squares (PLS) will be used. According to Gefen, Straub and Boudreau (2000), when exploratory studies are carried out and relatively small samples are used, this multivariate statistical technique is more suitable than others, such as LISREL, based on the covariance analysis. The PLSGraph V. 3.00 Build 1126 (Chin and Frye, 2003) software has been used. PLS analysis provides results for both the structural model (hypothesized relationships) and the measurement model (reliability and validity of indicators), according to Sánchez-Franco and Roldán (2005). PLS is especially appropriate for analysis of measurement and structural models when both formative and reflective constructs are used (Diamantopoulos and Winklhofer, 2001).

Second order constructs have to be built prior to operate the full structural model. The items measuring those social capital constructs used as first-order dimensions are optimally weighted and combined using the PLS algorithm to create latent variable scores. These latter scores, in turn, are then used as indicators to more accurately form the second-order construct (Chin and Gopal, 1995, Calvo-Mora, Leal and Roldán, 2005).

Additionally, with the purpose of exploring possible differences in the results between both countries, a multigroup analysis has been performed. This technique looks for statistically significant differences in path coefficients between sub-samples (Chin, 2000). If they are found, they may be attributed to differences in national culture, at least partly.

6.- Results

A PLS model is analysed and interpreted in two stages. The first one refers to the assessment of the measurement model (reliability and validity analysis). Only then conclusions regarding structural relationships among the constructs may be logically derived (Barclay, Higgins and Thompson, 1995).

a) Measurement model

Reliability analysis may be carried out using item loadings. In this sense, individual reflective-item reliability is considered adequate when item loadings are above 0.707 on their respective constructs. It means that shared variance between the construct and its indicators, is greater than the error variance (Sánchez-Franco and Roldán, 2005). Table 1 presents item loadings for our model. The three reflective constructs has item loadings well above that threshold level.

Insert table 1 about here

For formative constructs, on the other hand, weights provide information about the make up and relative importance of each indicator in the creation/formation of the component (Chin, 1998). In this respect, a customary precaution is checking for multicollinearity (Sánchez-Franco and Roldán, 2005). This has been done through the analysis of variation inflation factors (VIF), which are well below the usual threshold level ($VIF < 5$), indicating multicollinearity is not a concern in this case.

Regarding Bridging CSC, the two items forming this construct have similar weights, indicating their relative contributions are broadly equivalent. For Bonding CSC, in contrast, the contribution of the family role-model is very small in absolute value, and negative. This would be indicating the contribution of this item to the construct is negligible.

The idea that a family role model contribute very weakly to the Bonding CSC construct is somewhat surprising. We analysed country differences and found that for Spain, the weight was positive and substantially higher (0.1593), though still the weakest of them four. In contrast, the weight for Taiwan was clearly negative (-0.1671). This result will receive further attention in the discussion section.

Composite reliability scores are also included in Table 1. They assess the internal consistency of the constructs (Roldán and Leal, 2003, Barroso, Cepeda and Roldán, 2008). It is usually assumed than a 0.7 threshold is enough for initial stages of research (Nunnally, 1978). In this case, scores are above 0.9 for the three reflective constructs considered.

Average Variance Extracted (AVE) assesses the amount of variance that a construct captures from its indicators relative to the amount due to measurement error (Sánchez-Franco and Roldán, 2005). It is usually considered that a level above 0.5 indicates adequate reliability (Gefen et al., 2000).

Insert table 2 about here

Discriminant validity may also be assessed comparing AVE and the variance shared between this construct and the others in the model; that is, the squared correlation between each pair of constructs (Barclay et al., 1995). In this sense, Table 2 presents AVE scores on the main diagonal, together with squared correlations. As may be observed, AVE scores are always higher, indicating adequate discriminant validity.

b) Structural model

Results from the measurement model indicate constructs present adequate properties, except for the surprising result regarding the influence of a family role model in forming the Bonding CSC construct. Keeping this in mind, the results for the structural model may now be analysed. Figure 3 shows the variance explained (R^2) in the endogenous constructs and the path coefficients (β) for all significant relationships. Consistent with Chin (1998), bootstrapping (500 resamples) has been used to generate standard errors and t-statistics. Bootstrap represents a non-parametric approach for estimating the precision of the PLS estimates. This allows us to assess the statistical significance of the path coefficients.

Insert figure 3 about here

Table 3 compares the coefficients and significance levels for the combined sample and for each sub-sample. As may be observed, hypotheses H1, H2 and H3 are fully corroborated for the combined sample, and also for each of the national samples. The same may be said with respect to hypotheses H4 and

H5, derived from the entrepreneurial intention model. Besides, a non-hypothesized relationship between Bridging CSC and Desirability was found for the combined sample, but it was not significant for either of both subsamples. This may be simply due to a size effect.

Insert table 3 about here

c) Multigroup analysis

Finally, the multigroup analysis was carried out to test whether there were any statistically significant differences among both sub-samples with respect to path coefficients. We have applied the approach proposed by Chin (2000) and implemented by Keil, Tan, Wei, Saarinen, Tuunainen and Wassenaar (2000, p. 315) and Sánchez-Franco and Roldán (2005). In accordance with this procedure, a *t*-test has been calculated following equation 1, which follows a *t*-distribution with $m + n - 2$ degrees of freedom, Sp (equation 2) being the pooled estimator for the variance, m the number of cases of the Spanish sample, n the number of cases of the sample from Taiwan, and SE the standard error for the path provided by PLS-Graph in the bootstrap test. Results are described in Table 4...

$$t = \frac{Path_{Spain} - Path_{Taiwan}}{Sp \sqrt{\frac{1}{m} + \frac{1}{n}}} \approx t(m + n - 2)$$

Equation 1. *T*-statistic with $m + n - 2$ degrees of freedom

$$Sp = \sqrt{\frac{(m-1)^2}{m+n-2} xSE^2_{\text{Spain}} + \frac{(n-1)^2}{m+n-2} xSE^2_{\text{Taiwan}}}$$

Equation 2. Pooled estimator for the variance

Insert table 4 about here

As Table 4 shows, the effect of bonding and bridging CSC on desirability and feasibility is equivalent in both cases. However, the formation of intention is clearly different. In Spain, desirability is a much more important influence on intention than feasibility is. Conversely, Taiwanese students had their intention more strongly based on feasibility perceptions.

7.- Discussion and conclusion.

This study has tried to contribute to the cognitive analysis of the start-up process from a new perspective. Thus, starting from an integration of entrepreneurial intention models (Shapiro and Sokol, 1982, Ajzen, 1991, Liñán, 2004), social capital has been introduced as a novel factor. Social capital is defined as the whole set of relationships which an individual has. It gives access to other production resources, such as physical and human capital. Social capital facilitates the decision-making process, the performance of a concrete behaviour, and collective action through reciprocity and mutual trust.

In the proposed model, CSC has been specifically considered, since it consists on the transmission of values, beliefs and attitudes which determine perceptions and, through them, intentions to perform behaviours, such as

starting up a firm. This CSC may derive from both strong and weak ties. Thus, two categories have been considered: bonding and bridging CSC.

The empirical analysis carried out has corroborated the indirect influence of CSC on entrepreneurial intention. Cognitive social-capital measures exert their direct influence on perceptions and these, in turn, on intention. Results from the structural model explain 57% of the variance in entrepreneurial intention. This notably improves previous research, which typically explains less than 40% of the variance in this construct (Autio et al., 2001, Kolvereid, 1996).

All our hypotheses have been confirmed. Bonding CSC significantly explains both perceived desirability (H1) and perceived feasibility (H2). Bridging CSC explains feasibility (H3). Meanwhile, Perceived desirability and feasibility significantly explain entrepreneurial intention (H4 and H5, respectively). Besides, these hypotheses are confirmed not only on the combined sample, but also in each of the national sub-samples. Therefore, the model proposed seems to be considerably robust.

On the other hand, a non-hypothesized relationship has emerged for the combined sample. Bridging CSC exerts a weak but significant influence on perceived desirability. However, this does not hold for either sub-sample. Therefore, further research would be needed before this hypothesis is included or rejected, especially given that no strong theoretical support has been found for it.

With respect to the multi-group analysis performed, results were not conclusive. On the one hand, the relative contribution of desirability and feasibility to explaining intention is significantly different in both countries. On

the other hand, there were no significant country differences regarding the effects of CSC on perceived feasibility and desirability.

In this sense, the role of culture should be considered. No specific research comparing the effects of national cultural differences on entrepreneurial intentions for these two countries has been found. However, Mcgrath et al. (1992) compared cultural values of entrepreneurs from Taiwan and the USA (and also China) and Uslay, Teach, & Schwartz (2002) compared entrepreneurial attitudes of Spanish and US MBA students (and also Turkish).

Mcgrath et al. (1992) found that Taiwanese entrepreneurs disagree significantly more than their US counterparts with the statement 'starting a company adds to the excitement of your life'. Meanwhile, Uslay et al. (2002) found that Spanish students agreed significantly more than their US counterparts with the statement 'entrepreneurship offers job satisfaction'. This would be indicating that 'salient beliefs' conforming the motivational intention antecedents are different in each culture (Ajzen, 1991). In this sense, entrepreneurial intention could be more closely linked to perceived desirability among Spanish respondents, whereas in Taiwan perceived feasibility would be a relatively stronger influence.

Taking into account cognitive theory, it is clear that values affect perceptions (Bandura, 1977, 1997, Baron, 2004). It is also clear that the essence of both CSC and national culture are values (Inglehart et al., 2004, Hofstede, 2005). But it seems that they exert a differentiated and parallel influence. In this sense, values, beliefs and trust transmitted through personal contacts (CSC) exert a similar effect on perceptions in both cultures, according to the multigroup analysis. This would be indicating that national cultural values do not modify the

kind of entrepreneurial values and beliefs transmitted by CSC in each country, as option A in figure 2 suggested. Instead, these national cultural values would exert a parallel influence on perceptions (along with CSC), as shown by option B in figure 2.

Further research is undoubtedly needed to explore the specific ways through which values, beliefs and trust affect perceptions. In particular, this study should be repeated using alternative samples from diverse cultural contexts and including different indicators for national cultural values.

The present study has a number of limitations that should be acknowledged. To start with, this is a first attempt to introduce CSC variables into entrepreneurial intention models. Therefore, alternative measures should be developed and tested. Another area of concern is the effect of a family role-model in forming the bonding CSC construct. Previous literature suggests that it contributes to the formation of values and beliefs towards entrepreneurship (Cooper and Dunkelberg, 1987, Greve and Salaff, 2003, Matthews and Moser, 1995). Since no multicollinearity problems were found, it may be the case that the influence of a family role model is distinct from the other bonding CSC measures. Alternatively, as Scherer et al. (1991) suggest, this influence may depend on personal relationships with parents and the evaluation made about how successful these parents are as entrepreneurs.

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Notes

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Table 1. Full-sample measurement model (reliability indicators)

	Weights	Loadings	Composite reliability	Average Variance Extracted (AVE)
Bonding CSC			---	---
Approval	0.595			
Valuation	0.373			
Family RModel	-0.073			
Non-Family RM	0.511			
Bridging CSC			---	---
Institutional Knowl	0.702			
Work_exp	0.675			
Desirability			0.928	0.721
i11aatra		0.728		
i11batra		0.886		
i11catra		0.891		
i11datra		0.853		
i11eatra		0.876		
Feasibility			0.920	0.657
i15acapa		0.739		
i15bcapa		0.851		
i15ccapa		0.876		
i15dcapa		0.739		
i15ecapa		0.813		
i15fcapa		0.836		
Intention			0.958	0.793
i18ainte		0.795		
i18binte		0.910		
i18cinte		0.907		
i18dinte		0.927		
i18einte		0.896		
i18finte		0.902		

Table 2. Discriminant validity

	Intention	Feasibility	Desirability	BondingCSC	BridgingCSC
Intention	0.793				
Feasibility	0.254	0.657			
Desirability	0.486	0.155	0.721		
BondingCSC	0.095	0.098	0.143	n.a.	
BridgingCSC	0.040	0.117	0.031	0.027	n.a.

n.a. = non-applicable

Table 3. Compared path coefficients for the structural model

	Combined (N = 533)	Spain (N = 400)	Taiwan (N = 133)
Effects on endogenous variables	Path coefficients (β) / t-value	Path coefficients (β) / t-value	Path coefficients (β) / t-value
Desirability	R² = 0.156	R² = 0.183	R² = 0.327
H1: Bonding CSC -> Desirability	0.359*** / 8.6907	0.407*** / 7.9662	0.554*** / 8.3258
Non-hypot.: Bridging CSC->Desirability	0.116** / 2.7947	0.067 ^{ns} / 1.4517	0.063 ^{ns} / 0.8042
Feasibility	R² = 0.184	R² = 0.195	R² = 0.253
H2: Bonding CSC -> Feasibility	0.264*** / 6.1422	0.266*** / 5.5003	0.410*** / 0.5920
H3: Bridging CSC -> Feasibility	0.298*** / 7.1683	0.295*** / 6.1481	0.209** / 2.5954
Intention	R² = 0.548	R² = 0.567	R² = 0.579
H4: Desirability -> Intention	0.589*** / 19.0297	0.663*** / 20.2410	0.302*** / 4.8148
H5: Feasibility -> Intention	0.272*** / 7.1065	0.183*** / 4.3092	0.579*** / 8.8928

*** p < 0.001, ** p < 0.01, * p < 0.05, ns: not significant (based on t(499), one-tailed test)

t(0.05; 499) = 1.64791345; t(0.01; 499) = 2.333843952; t(0.001; 499) = 3.106644601

Table 4. Multigroup analysis

	β_{Spain}	β_{Taiwan}	$\beta_{\text{Spain}} - \beta_{\text{Taiwan}}$	t-student
Bonding → desirability	0.407	0.554	-0.147 ^{ns}	-1.52454
Bonding → feasibility	0.266	0.41	-0.144 ^{ns}	-1.55182
Bridging → desirability	0.067	0.063	0.004 ^{ns}	0.04357
Bridging → feasibility	0.295	0.209	0.086 ^{ns}	0.90396
Desirability → intention	0.663	0.302	0.361 ^{***}	5.36718
Feasibility → intention	0.183	0.579	-0.396 ^{***}	-4.79557

Note: ^{ns} = not significant. Levels of significance based on a Student $t_{(531)}$ distribution with two tails.
* $p < .05$, $t_{(.05, 531)} = 1.964$, ** $p < .01$, $t_{(.01, 531)} = 2.585$, *** $p < .001$, $t_{(.001, 531)} = 3.308$

Figure1: Research model and hypotheses

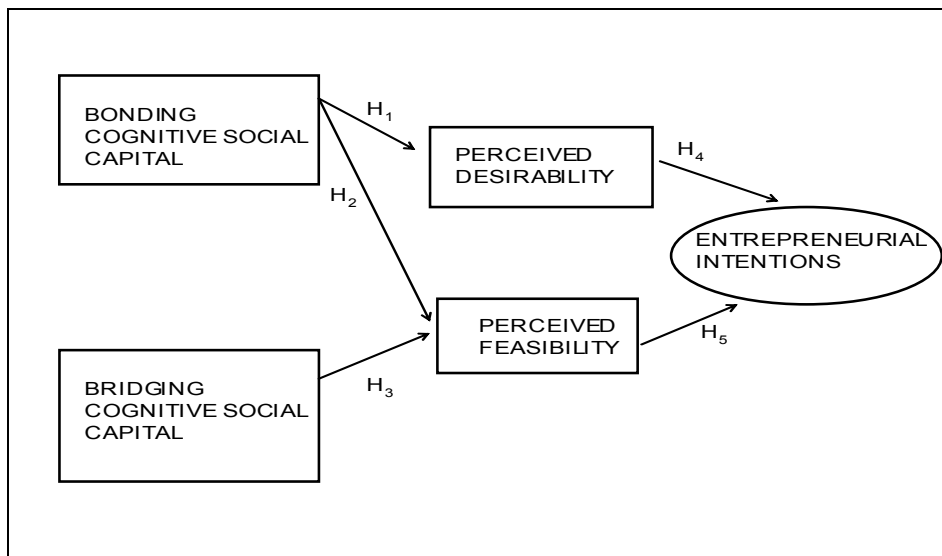


Figure 2
A tentative cross-cultural model of entrepreneurial intention

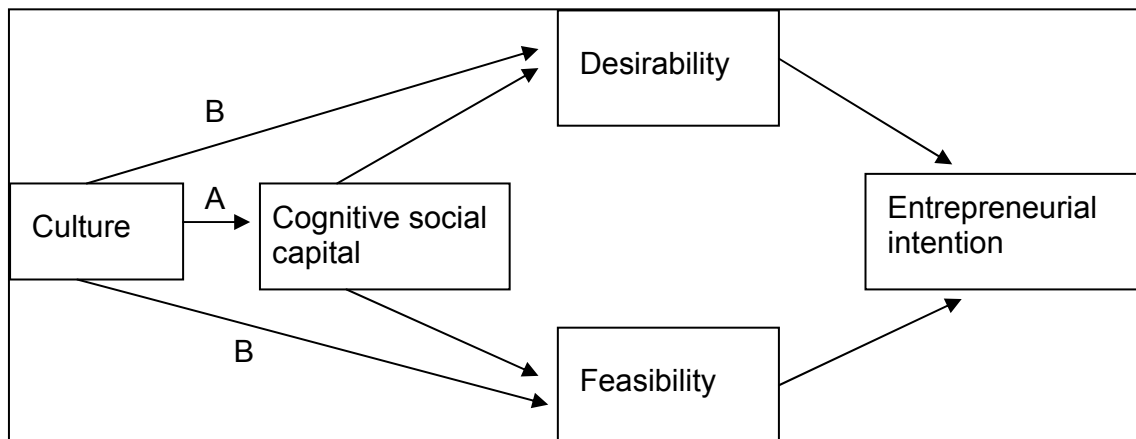
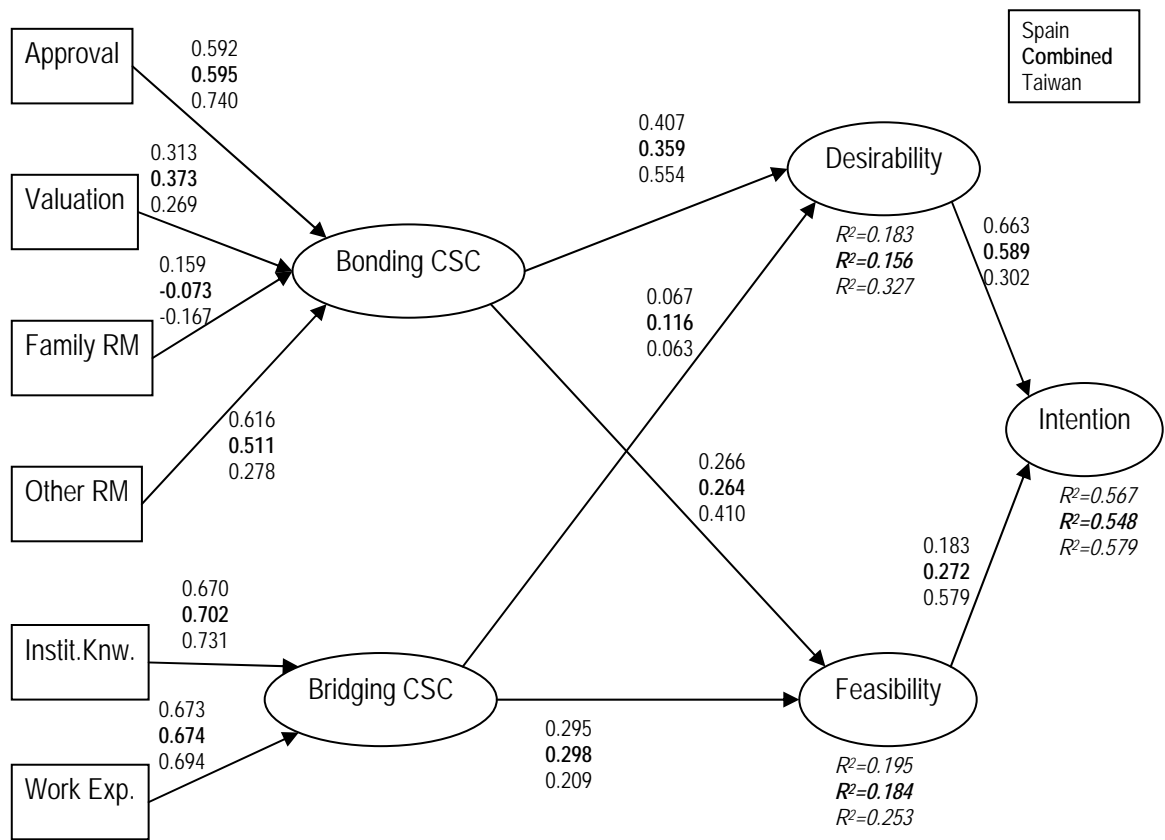


Figure 3. Structural model results



Note: figures below the constructs indicate explained variance